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Special Report No. 8

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An Inquiry into DOMESTIC HOT WATER SUPPLY in Great Britain

PART I

Distribution of Water Heating Appliances and their Use in Winter

MAJESTY'S STATIONERY OFFICE

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NATIONAL BUILDING STUDIES

THE object of this series is to provide as far as possible a single and convenient source of information issued by Government Departments on matters of technical interest to the building industry.

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NATIONAL BUILDING STUDIES

Special Report No. 8

MINISTRY OF WORKS

AN INQUIRY INTO DOMESTIC HOT WATER SUPPLY IN GREAT BRITAIN

PART I

DISTRIBUTION OF WATER HEATING APPLIANCES AND THEIR USE IN WINTER

LONDON
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Preface

AT the request of the Minister of Works, the Building Research Board set up in 1942 a Committee on Heating and Ventilation to review existing information and practice and to make recommendations regarding the heating and ventilating of the dwellings to be built after the war. On behalf of this Committee the Wartime Social Survey conducted an investigation which included a study of the provision of hot water in selected households.

In 1946, having regard to the special importance of an adequate supply of hot water, the Scientific Advisory Committee of the Ministry of Works expressed the view that a more intensive investigation into the question should be made. This view was endorsed by the Ministry of Health, the Department of Health for Scotland, the Ministry of Fuel and Power and the Building Research Station of the Department of Scientific and Industrial Research.

Accordingly a Working Group, under the Chairmanship of Dr. F. Yates, F.R.S., was set up by the Social Survey Panel of the Scientific Advisory Committee to study the problem. Following a pilot survey carried out by the Chief Scientific Adviser's Division of the Ministry of Works, the Social Survey Division of the Central Office of Information was requested to carry out a national survey on the subject. This was done in March, 1947, under severe winter conditions, and repeated with a somewhat smaller sample in the summer of 1948 in order to study seasonal effects.

The present Report is based on the winter survey and includes non-seasonal aspects such as the distribution of water heating appliances. A second Report will be issued when the data from the summer survey have been analysed. It will also include the results of parallel smaller but intensive surveys undertaken to obtain more quantitative data on he consumption of hot water and its use for specific purposes.

CONTENTS

PAGE

INTRODUCTION 1
Type of District—Rural or Urban 2
Region 2
Economic Groups 2
Age of Building 2
Type of Dwelling 3

COLD WATER SUPPLY 3

WATER HEATING APPLIANCES AND BATHING FACILITIES .. 5
Solid Fuel 5
Gas 5
Electricity 5
Piping of Hot Water 10
Satisfaction with Appliances 12
Purposes for which Appliances are used 14
Bathing Facilities 16

HOT WATER SUPPLY 18
Baths and Washing 18
Clothes Washing 26
Dish Washing and House Cleaning 30
Hot Water Facilities in relation to recommendations in the Egerton Report 38
Methods of Heating Piped Supplies 40
Lagging 42

CONCLUSIONS 43
Households having access to certain Water Heating Appliances 43
Combinations of Appliances 43
Distribution of Appliances 44
Notes on Individual Appliances 45
Satisfaction with Appliances 48

APPENDIX I.—Districts in which Interviews took place .. 49

APPENDIX II.—Comparison of Sample for Water Heating Inquiry with Figures from Other Surveys and Published Statistics 50

LIST OF TABLES

PAGE
TABLE 1.—Cold water supply in urban and rural districts and in the Regions 4
TABLE 2.—Cold water supply in dwellings of different ages and types 4
TABLE 3.—Cold water supply in the households of the Economic Groups 4
TABLE 4.—Fuels used in water heating appliances 5
TABLE 5.—Appliances installed in urban and rural districts and in the Regions 7
TABLE 6.—Appliances installed in dwellings of different ages and types 8
TABLE 7.—Appliances in the households of the Economic Groups 9
TABLE 8.—Households having appliances piped to different points 10
TABLE 9.—Points to which appliances are piped 11
TABLE 10.—Housewives' experience with appliances in winter 13
TABLE 11.—Purposes for which appliances are used 15
TABLE 12.—Bathing facilities in urban and rural districts and in the Regions 16
TABLE 13.—Bathing facilities in dwellings of different ages and types 17
TABLE 14.—Bathing facilities in the households of the Economic Groups 17
TABLE 15.—Hand basins in bathrooms 18
TABLE 16.—Methods of heating water for baths in urban and rural districts and in the Regions 19
TABLE 17.—Combinations of methods of heating water for baths in winter 20
TABLE 18.—Extent to which appliances are supplemented by kettles and pans.. 20
TABLE 19.—Methods of heating water for baths in the households of the Economic Groups 20
TABLE 20.—Methods of heating water for washing in urban and rural districts and in the Regions 22
TABLE 21.—Methods of heating water for washing in the households of the Economic Groups .. 23
TABLE 22.—Extent of satisfaction with hot water supply for baths and washing in urban and rural districts and in the Regions 24
TABLE 23.—Extent of satisfaction with hot water supply for baths and washing in the Economic Groups .. 25
TABLE 24.—Extent of satisfaction with hot water supply for baths and washing in buildings of different ages 25
TABLE 25.—Extent of satisfaction with hot water supply in winter where one method is used for heating bath water 26

PAGE

TABLE 26.—Methods of heating water for washing clothes, in urban and rural districts and in the Regions 27

TABLE 27.—Methods of heating water for washing clothes in the households of the Economic Groups .. 28

TABLE 28.—Extent of satisfaction with hot water supply for washing clothes, in urban and rural districts and in the Regions 29

TABLE 29.—Extent of satisfaction with hot water supply for washing clothes in buildings of different ages 29

TABLE 30.—Extent of satisfaction with hot water supply for washing clothes in the households of the Economic Groups 30

TABLE 31.—Methods of heating water for dish washing in urban and rural districts and in the Regions.. 31

TABLE 32.—Methods of heating water for dish washing in the households of the Economic Groups .. 32

TABLE 33.—Methods of heating water for house cleaning in urban and rural districts and in the Regions .. 34

TABLE 34.—Methods of heating water for house cleaning in the households of the Economic Groups .. 35

TABLE 35.—Extent of satisfaction with hot water supply for dish washing and house cleaning in urban and rural districts and in the Regions 36

TABLE 36.—Extent of satisfaction with hot water supply for dish washing and house cleaning in the Economic Groups 37

TABLE 37.—Extent of satisfaction with hot water supply for dish washing and house cleaning in buildings of different ages 37

TABLE 38.—Hot water facilities in different parts of Great Britain 39

TABLE 39.—Relation between hot water facilities and bathing facilities 40

TABLE 40.—Appliances by which water is heated in different parts of Great Britain 41

TABLE 41.—Lagging 42

TABLE 42.—Households having access to certain water heating appliances 43

TABLE 43.—Households having appliances alone or in combination with one other appliance 44

TABLE 44.—Distribution of appliances by type of district, Region, Economic Group, age of building and type of dwelling 46

TABLE 45.—Extent of dissatisfaction with method of heating water in buildings of different ages 48

AN INQUIRY INTO DOMESTIC HOT WATER SUPPLY IN GREAT BRITAIN

PART I. DISTRIBUTION OF WATER HEATING APPLIANCES AND THEIR USE IN WINTER

Introduction

IN March, 1947, under winter conditions, and during the summer of 1948 a survey was made of the facilities available in British homes for heating water for ordinary domestic use.

The winter survey was planned by a working group under the Chairmanship of Dr. F. Yates, F.R.S., in collaboration with the Social Survey; other interested Departments were also represented. It was to cover 6,000 representative households; a somewhat smaller sample was taken for the summer survey. For the purposes of these surveys a household was defined as a group of people living in the same dwelling and sharing in the same housekeeping unit. Details of the sampling are given in Appendix I and a comparison between the sample distribution obtained and other surveys and published statistics is given in Appendix II.

The object of the inquiry was to determine :—

The distribution of existing hot water appliances and facilities ;

The relation between the consumption and use of hot water and the appliances available ; and

The amount of hot water adequate for the average household.

The present Special Report is based on a report submitted by the Social Survey which deals with the main data from the winter survey, *i.e.*, the distribution of appliances and facilities, an aspect which is not affected by seasonal variations, and their use in winter. Discussion of other aspects must be reserved until the data from the summer survey has been analysed and studied.

The field work for the survey was carried out by Research Services Ltd. A personal interview method of investigation was used. A standard schedule covering the information required was prepared and this information was obtained solely from a housewife at an interview usually lasting some 20 minutes. During this time the interviewer was able to establish a satisfactory relationship with the housewife and, when necessary, to look at the appliances installed and discuss them on the spot. The inquiry was on the whole well received; the housewives were interested and willing to talk on the subject.

In general the data were analysed in terms of the following groups :—

TYPE OF DISTRICT — RURAL OR URBAN

The division is by administrative area ; county boroughs, boroughs, and urban districts count as urban.

REGION

Scotland.

North. This consists of the counties of Northumberland, Durham, Yorkshire, Lancashire, Cheshire, Cumberland and Westmorland.

Midlands and Wales. This consists of Wales and the counties of Leicestershire, Lincolnshire, Derbyshire, Nottinghamshire, Northamptonshire, Rutland, Worcestershire, Warwickshire, Staffordshire, Herefordshire and Shropshire.

South and East. This Region includes the counties of Hampshire, Oxfordshire, Berkshire, Buckinghamshire, Dorset, Sussex, Somerset, Gloucestershire, Wiltshire, Devonshire, Cornwall, Bedfordshire, Cambridgeshire, Suffolk, Norfolk, Huntingdonshire, and parts of the counties of Essex, Hertfordshire, Surrey and Kent.

London. This includes the City of London, the County of London, Middlesex, and parts of the counties of Essex, Hertfordshire, Surrey and Kent.

ECONOMIC GROUPS

A broad economic grouping of households has been used which is based on the basic weekly wage rate of the chief wage earner, *i.e.*, the senior male member of the household in full employment, or the senior female in full employment in households where there is no fully employed male aged 20 or over. In households where there is no chief wage earner, the pension or income of his or her equivalent is used as the basic rate. This classification does not attempt to take into account the weekly wage rates of other members of the household. Five groups are used :—

GROUP	WEEKLY WAGE RATE
I	Up to £3
II	Over £3 and up to £4
III	Over £4 and up to £5 10s. 0d.
IV	Over £5 10s. 0d. and up to £10
V	Over £10

Group I consists mainly of households dependent on a pensioner. In the households of Group II the chief wage earner is generally an unskilled operative. For Group III the chief wage earners are the better paid unskilled operatives, the lower paid skilled operatives, and the lower paid clerical workers. In Group IV they are the better paid skilled operatives, the better paid clerical workers, and the lower paid managerial and professional workers. Finally in Group V they are the better paid managerial and professional workers.

AGE OF BUILDING

Households have been classified according to whether the building in which they live was erected before 1914 or after 1918.

TYPE OF DWELLING

If a household occupies the whole or a part, but not a self-contained part, of a house, it is classified as Detached, Semi-detached or Terrace. If it occupies the whole or part of a flat it is classified as Block Flat or Tenement or Other Flat, in the following list of definitions :—

Detached House. A house standing separately.

Semi-detached House. One of a pair of houses in which one side wall is shared or the end house of a terrace.

Terrace House. A house in a continuous row sharing both side walls with other houses.

Block Flat or Tenement. A dwelling in a block of flats or tenements originally built as such.

Other Flat. A self-contained flat in a converted house, a flatted house or over a shop.

Other definitions will be given as they become necessary.

During the course of the investigation a good deal of information was obtained about the degree of satisfaction with the various types of appliance and facility, and about reasons for dissatisfaction. It must be borne in mind, however, that the opinions expressed were given during the severe weather of March, 1947.

Cold Water Supply

Before considering the water heating appliances installed in the dwellings covered in the survey it is relevant to state the proportion of households in the sample having a piped supply of cold water. This is done in Tables 1, 2 and 3.

The proportion of households with a piped supply is considerably higher in urban than in rural areas. There are only small differences between the Regions. The Midlands and Wales and the South and East Regions have each a relatively large rural population and show rather higher proportions without piped supply than the others.

Nearly all the newer dwellings in the sample have a piped supply of cold water. The percentage of detached houses without a piped supply is relatively high, probably because many of them are cottages standing alone in rural areas.

There are quite marked differences between some of the economic groups. In the lower groups, a smaller percentage of the households have a piped supply than in the higher groups.

The proportion of households without a piped supply of cold water is relatively high in rural areas, in older buildings and in the lower economic groups. This has some bearing on the proportions in different groups and environments having certain water heating appliances.

TABLE 1. COLD WATER SUPPLY IN URBAN AND RURAL DISTRICTS AND IN THE REGIONS

	NUMBER OF HOUSEHOLDS IN SAMPLE	PERCENTAGE OF HOUSEHOLDS WITH:	
		Piped supply of cold water	No piped supply of cold water
District			
Urban	4,801	97	3
Rural	1,196	79	21
Total	5,997	93	7
Region			
Scotland	644	93	7
North	1,677	95	5
Midlands and Wales ..	1,308	90	10
South and East ..	1,331	90	10
London	1,037	96	4
Total	5,997	93	7

TABLE 2. COLD WATER SUPPLY IN DWELLINGS OF DIFFERENT AGES AND TYPES

	NUMBER OF HOUSEHOLDS IN SAMPLE	PERCENTAGE OF HOUSEHOLDS WITH:	
		Piped supply of cold water	No piped supply of cold water
Age of Building			
Pre-1914	4,095	90	10
Post-1918	1,902	99	1
Total	5,997	93	7
Type of Dwelling			
Detached house ..	764	85	15
Semi-detached house	1,782	94	6
Terrace house ..	2,730	94	6
Block flat or tenement	398	97	3
Other flat	323	96	4
Total	5,997	93	7

TABLE 3. COLD WATER SUPPLY IN THE HOUSEHOLDS OF THE ECONOMIC GROUPS

	NUMBER OF HOUSEHOLDS IN SAMPLE	PERCENTAGE WITH:	
		Piped supply of cold water	No piped supply of cold water
Economic Group			
I (Lowest)	667	87	13
II	476	86	14
III	2,619	93	7
IV	1,757	97	3
V	478	98	2
Total	5,997	93	7

Water Heating Appliances and Bathing Facilities

The water heating appliances found in the sample households have been classified first according to the source of heat:

Solid Fuel
Gas
Electricity

and again by type:

SOLID FUEL

Inset fire. An ordinary open fire used primarily for space heating with a boiler for heating water at the back of it.

Fire with oven. A range or inset fire with an oven for cooking and a boiler attached.

Independent boiler. A stove standing on its own, intended primarily for water heating and not for other heating purposes.

Copper, set-pot or wash boiler.

GAS

*Single point geyser.** A gas water heater which supplies instantaneously heated water from one outlet only. Occasionally the outlet pipe switches to serve both bath and hand basin.

Multi-point geyser. A gas water heater which supplies instantaneously heated water from two or more taps.

Storage heater. A gas water heater which supplies hot water to a storage tank.

Copper, or wash boiler.

ELECTRICITY

Storage heater. An electric water heater which supplies hot water to its own storage tank.

Immersion heater. An electric water heater which heats the water in a tank served by another appliance.

Copper, or wash boiler.

TABLE 4. FUELS USED IN WATER HEATING APPLIANCES

Number of households in sample	5,997
Percentage using solid fuel only in water heating appliances	40
Percentage using gas only in water heating appliances	17
Percentage using electricity only in water heating appliances	2
Percentage using solid fuel and gas in water heating appliances	17
Percentage using solid fuel and electricity in water heating appliances	5
Percentage using gas and electricity in water heating appliances	1
Percentage using all three in water heating appliances	2
Percentage with no water heating appliance	15
Percentage with hot water laid on	1

---

* The term geyser is used in this paper to include the earlier forms of geyser and more recent patterns of instantaneous gas water heater.

Dwellings to which hot water is laid on from outside, for example blocks of flats with a communal supply, form a separate class.

The numbers of households using the different sources of heat in water heating appliances are given, as percentages of the sample, in Table 4.

The proportions of the sample of households having these different types of appliances are stated in Tables 5, 6 and 7.

Apart from the copper the commonest type of water heating appliance is the fire with oven; it is found in nearly a quarter of all households. Gas geysers and inset fires are fairly common. About equal proportions, 7 per cent, have an independent boiler and an electric storage or immersion heater. More than half of all households have some sort of copper, generally a gas or a solid fuel copper. Electric coppers are much less common.

As many as 15 per cent of the households have no water heating appliance at all—not even a copper—while in 28 per cent of the households the copper is the one and only appliance. About 47 per cent of the households have only one appliance, 34 per cent have two appliances and 4 per cent have three or more. (*See* p. 44.)

The proportion of households without an appliance is about the same in urban and rural districts. Gas and electric appliances are less common in the country, where the fire with oven is found more frequently. About the same proportion in each type of district have coppers; solid fuel coppers are commoner in the country and gas coppers in towns.

Scotland and London show relatively high proportions without any appliance whatever. Apart from the independent boiler, solid fuel appliances are more frequent in the northern Regions, and gas appliances, with the exception of the gas copper, in the Southern. Independent boilers are commonest in London and the South and gas coppers in the North.

All appliances, except the solid fuel copper, are found more frequently in new than in old dwellings. The greatest differences are shown by the inset fire and the immersion heater.

The high proportion of households in the block flat or tenement group—39 per cent—without appliances is likely to be accounted for by the tenement dwellings. This contrasts with the low proportion, only 7 per cent, of households in semi-detached houses having no appliance.

The proportion of households having no appliance rises sharply from 2 per cent in the highest economic group to 29 per cent in the lowest. Independent boilers and gas and electric appliances are much commoner in the higher than the lower groups. One fifth of the households in the highest group have electric immersion heaters. In all groups substantial proportions have gas coppers but in the lower groups the solid fuel copper is the more usual.

TABLE 5. APPLIANCES INSTALLED IN URBAN AND RURAL DISTRICTS AND IN THE REGIONS

	NUMBER OF HOUSEHOLDS IN SAMPLE	*PERCENTAGE OF HOUSEHOLDS WITH:												
		†SOLID FUEL				GAS				ELECTRIC			HOT WATER LAID ON	NO APPLIANCE
		Inset fire	Fire with oven	Independent boiler	Copper	‡Single point geyser(s)	Multi-point geyser	Storage heater	Copper	Storage heater	§Immersion heater	Copper		
District														
Urban	4,801	13	20	7	22	11	2	1	35	4	5	4	1	15
Rural	1,196	6	31	6	47	4	—	—	13	2	1	4	1	16
Total ..	5,997	11	23	7	27	10	2	1	30	3	4	4	1	15
Region														
Scotland	644	23	17	3	33	2	—	—	15	1	3	1	—	28
North	1,677	13	43	1	27	5	—	1	47	2	7	6	—	9
Midlands and Wales	1,308	12	35	3	36	6	1	1	33	3	4	3	1	11
South and East ..	1,331	6	5	11	28	17	3	1	29	8	2	4	1	15
London	1,037	10	5	17	13	17	3	1	17	4	4	3	2	22
Total ..	5,997	11	23	7	27	10	2	1	30	3	4	4	1	15

* Less than 1% of households have other types of appliances. 19 households have electric instantaneous heaters, 4 gas circulators, and 18 have coppers fitted with pipes and a pumping system.

† Without immersion heater.

‡ There are 582 households having single point geysers of which 47 have two geysers and 2 have three. There are thus 633 single point geysers.

§ Of the immersion heaters 51% are installed in tanks belonging to inset fire appliances, 33% with fire-with-oven appliances, and 16% with independent boilers.

TABLE 6. APPLIANCES INSTALLED IN DWELLINGS OF DIFFERENT AGES AND TYPES

	NUMBER OF HOUSEHOLDS IN SAMPLE	*PERCENTAGE OF HOUSEHOLDS WITH :												
		†SOLID FUEL				GAS				ELECTRIC			HOT WATER LAID ON	NO APPLIANCE
		Inset fire	Fire with oven	Independent boiler	Copper	‡Single point geyser(s)	Multi-point geyser	Storage heater	Copper	Storage heater	§Immersion heater	Copper		
Age of Building														
Pre-1914	4,095	7	17	6	33	9	1	1	23	3	2	3	1	21
Post-1918	1,902	21	35	9	14	10	2	1	46	5	9	7	1	2
Total ..	5,997	11	23	7	27	10	2	1	30	3	3	4	1	15
Type of Dwelling														
Detached house ..	764	8	28	3	33	6	2	1	16	4	9	4	1	10
Semi-detached house	1,782	15	29	9	21	11	2	1	38	4	7	6	1	7
Terrace house ..	2,730	8	20	3	31	10	1	1	33	3	1	3	—	18
Block flat or tenement	398	18	6	2	28	4	2	1	11	2	1	1	4	39
Other flat	323	17	17	7	14	13	7	1	27	5	2	2	2	18
Total ..	5,997	11	23	7	27	10	2	1	30	3	3	4	1	15

* Less than 1% of households have other types of appliances. 19 households have electric instantaneous heaters, 4 gas circulators and 18 have coppers fitted with pipes and a pumping system.

† Without immersion heater.

‡ There are 582 households having single point geysers of which 47 have two geysers and 2 have three. There are thus 633 single point geysers.

§ Of the immersion heaters 51% are installed in tanks belonging to inset fire appliances, 33% with fire-with-oven appliances, and 16% with independent boilers.

TABLE 7. APPLIANCES IN THE HOUSEHOLDS OF THE ECONOMIC GROUPS

	NUMBER OF HOUSEHOLDS IN SAMPLE	*PERCENTAGE OF HOUSEHOLDS WITH :												
		†SOLID FUEL				GAS				ELECTRIC			HOT WATER LAID ON	NO APPLIANCE
		Inset fire	Fire with oven	Independent boiler	Copper	‡Single point geyser(s)	Multi-point geyser	Storage heater	Copper	Storage heater	§Immersion heater	Copper		
Economic Group														
I (Lowest) ..	667	7	17	1	35	7	—	1	21	1	—	1	—	29
II	476	10	21	1	35	8	1	—	25	1	1	1	—	22
III	2,619	10	23	2	31	8	1	1	31	3	1	4	—	18
IV	1,757	16	25	10	20	13	2	1	37	5	6	5	1	7
V	478	9	20	29	12	11	5	3	24	6	19	6	2	2
Total ..	5,997	11	23	7	27	10	2	1	30	3	4	4	1	15

---

* Less than 1% of households have other types of appliances. 19 households have electric instantaneous heaters, 4 gas circulators, and 18 have coppers fitted with pipes and a pumping system.

† Without immersion heater.

‡ There are 582 households having single point geysers of which 47 have two geysers and 2 have three. There are thus 633 single point geysers.

§ Of the immersion heaters 51% are installed in tanks belonging to inset fire appliances, 33% with fire-with-oven appliances, and 16% with independent boilers.

PIPING OF HOT WATER

Whether a hot water supply is satisfactory depends partly on the points from which it can be drawn. Tables 8 and 9 give the percentages of households in which hot water is piped to sink, bath and hand basin.

Only about one half of the households in the sample has a piped supply of hot water to the bath. The same proportion has hot water piped to the sink. No more than 46 per cent have hot water piped to both bath and sink. In 36 per cent of the households there is piped hot water at the hand basin. Only about one in three of the households have hot water piped to sink, bath and hand basin. In 44 per cent of the households there is no piped hot water at all.

Of course the number of points to which hot water is piped depends considerably on the kind of appliances installed.

The great majority of inset fires, independent boilers and immersion heaters deliver hot water to all three points. The fire with oven is commoner in the older houses and these are less often provided with bathrooms and hand basins.

Two-thirds of the gas and electric storage heaters are small appliances over the sink.

TABLE 8. HOUSEHOLDS HAVING APPLIANCES PIPED TO DIFFERENT POINTS

Number of households in sample	5,997
Percentage with hot water piped to sink	51
Percentage with hot water piped to bath	51
Percentage with hot water piped to hand basin	36
Percentage with hot water piped to sink only	5
Percentage with hot water piped to bath only	5
Percentage with hot water piped to sink and bath	10
Percentage with hot water piped to sink, bath and hand basin ..	36
Percentage with no piped hot water	44

TABLE 9. POINTS TO WHICH APPLIANCES ARE PIPED

	NUMBER OF APPLIANCES IN SAMPLE	PERCENTAGE OF APPLIANCES PIPED TO :									
		Sink	Bath	Hand basin	Sink only	Bath only	Hand basin only	Sink and bath	Bath and hand basin	Sink, bath and hand basin	Not piped
STORAGE HEATERS *Solid Fuel*											
Inset fire	688	99	96	85	3	—	—	12	1	84	—
Fire with oven ..	1,350	93	88	64	5	—	—	24	—	64	7
Independent boiler ..	391	100	100	94	—	—	—	6	1	93	—
Gas Storage	54	93	35	26	65	5	—	4	2	24	—
Electric Storage	207	91	40	27	60	6	—	6	3	25	—
Immersion	249	99	100	95	—	1	—	4	—	95	—
INSTANTANEOUS *Gas* Single point	633	36	63	2	36	62	1	—	1*	—	—
Multi-point	90	93	100	77	—	—	—	23	7	70	—

* Swivel outlet pipe.

SATISFACTION WITH APPLIANCES

The housewives were asked whether they were satisfied with their appliances. If they were not satisfied the reason was asked. Some of the results of this inquire are given in Table 10, but in drawing conclusions from these figures it should by remembered that the possession of some other appliance may have affected the degree of satisfaction expressed.

Amongst the piped appliances the immersion heater was thought satisfactory by the highest proportion. This was followed by the independent boiler. Gas geysers were found satisfactory by the lowest proportions.

The chief complaints made about inset fires and fires with oven were that the water took too long to get hot, it did not get hot enough and there was not enough of it. The independent boiler was criticised more for being a bother to light and keep going than for failing to heat the water satisfactorily.

The most frequently mentioned complaint about gas and electric storage heaters was that they did not provide enough hot water at a time. It will be remembered that most of these appliances are piped to the sink only, and it is likely that they are of types with small tanks.

As many as one in four of the housewives with gas geysers complained that the water has to be run slowly and many others said that the water did not get hot enough. The complaint that the appliance was often in need of repair was made more often about gas geysers than any other appliance.

The proportion of housewives complaining about expense is higher for the multi-point geyser than for any other appliance. It will be remembered that this appliance is more commonly found in the houses of the higher economic groups, who, it might be thought, would be less likely than other groups to have complaints about expense.

Nearly half of those with solid fuel coppers are dissatisfied. One in five said they were a bother to light or keep going and 13 per cent said the water took too long to get hot. It was found that 16 per cent of the coppers were not used at all. Relatively high proportions of those with gas or electric coppers were satisfied.

TABLE 10. HOUSEWIVES' EXPERIENCE WITH APPLIANCES IN WINTER

	NUMBER OF APPLIANCES IN SAMPLE	PERCENTAGE OF APPLIANCES CONSIDERED BY HOUSEWIFE TO BE :										
				REASONS FOR DISSATISFACTION								
		SATISFACTORY	NOT SATISFACTORY	Bother to light, keep going, adjust	Often in need of repairing	Water does not get hot enough	Not enough hot water at a time	Takes too long to get hot	Have to run water slowly	Expensive, uses too much fuel, etc.	Dirt, smells, fumes, drips, etc.	*Other
STORAGE HEATERS												
Solid Fuel												
Inset fire	688	67	33	3	3	14	20	17	2	4	2	2
Fire with oven ..	1,350	72	28	4	5	9	16	14	1	3	1	2
Independent boiler ..	391	75	25	10	4	5	1	6	1	7	7	1
Gas												
Storage	54	72	28	—	—	—	15	7	4	4	—	6
Electric												
Storage	207	71	29	—	1	3	20	12	1	5	—	2
Immersion	249	89	11	—	—	—	3	4	—	4	—	—
INSTANTANEOUS												
Gas												
Single point	633	59	41	5	8	13	—	—	25	3	4	3
Multi-point	90	53	47	4	13	24	—	—	27	19	2	1
COPPERS												
Solid fuel	1,613	55	45	22	7	2	7	13	—	3	4	7
Gas	1,826	77	23	—	2	1	4	8	—	4	1	4
Electric	232	81	19	—	—	1	5	7	—	2	—	3
Hot water laid on ..	47	77	23	—	—	11	17	—	—	—	—	—

* Mainly lack of piping and structural defects.

PURPOSES FOR WHICH APPLIANCES ARE USED

It is useful to consider in a general way the purposes for which different appliances are used. Table 11 shows that 92 per cent of the independent boilers and about three quarters of the other solid fuel storage appliances are used for all purposes.

Lower proportions of the inset fires and fires with oven are used for heating water for washing clothes than for other purposes. The low percentages of gas and electric storage heaters used for all purposes may be explained by the fact that they are usually piped only to the sink. It is of some interest to note that whereas only 35 and 40 per cent of these appliances are piped to baths, 50 and 78 per cent of their owners use them for heating bath water, so that considerable numbers carry water from the sink to the bath.

It will be recalled that in nearly all cases immersion heaters are piped to all points. They are, however, switched on more for baths than for other purposes. The figures given in Table 11 relate to winter conditions and it is likely that immersion heaters are used much more in summer when the solid fuel appliances with which they are combined are less likely to be alight.

Two thirds of the multi-point geysers are used for all purposes. Single point geysers are used more frequently for baths than for other purposes.

Coppers are of course used mainly for washing clothes but about 30 per cent of the households that have coppers use them for heating bath water. It has already been stated that in 28 per cent of the households the copper is the only water heating appliance. These households would be entirely dependent for their baths on the copper and kettles heated on the stove.

TABLE II. PURPOSES FOR WHICH APPLIANCES ARE USED

	NUMBER OF APPLIANCES IN SAMPLE	PERCENTAGE OF APPLIANCES USED IN WINTER FOR :									
		Baths	Washing	Washing clothes	Dish washing	House cleaning	All purposes	Baths and washing only	Washing clothes only	Other purposes	Not used (winter)
STORAGE HEATERS											
Solid Fuel											
Inset fire	688	94	95	76	94	94	72	1	—	26	1
Fire with oven	1,350	94	96	80	96	96	76	1	—	22	1
Independent boiler	391	99	96	93	95	95	92	2	—	5	1
Gas											
Storage heater	54	63	78	56	81	81	39	7	2	46	6
Electric											
Storage heater	207	50	85	64	86	84	52	7	—	36	5
Immersion	249	78	59	58	53	54	43	16	—	19	22
INSTANTANEOUS											
Gas											
Single point	633	71	40	30	36	36	13	50	—	30	7
Multi-point	90	96	83	71	79	79	64	11	—	22	3
COPPERS											
Solid Fuel	1,613	30	3	83	2	10	1	1	48	34	16
Gas	1,826	27	4	91	1	8	1	1	60	30	8
Electric	232	29	4	97	3	7	2	1	65	30	2

BATHING FACILITIES

The proportions of the households that have baths and bathrooms are given in Tables 12, 13 and 14.

Less than half the households have a bathroom of their own and only slightly more than half have the use of one. In about one third of the households baths have to be taken in the kitchen or in some rooms used for other purposes as well, generally in a portable bath. In 12 per cent of the households there is no bath at all.

The same proportion of the households in urban and rural districts have their own bathroom. There are fewer shared bathrooms in the country and more portable baths. In the rural districts there are fewer households without a bath than in the towns.

The proportion of households with a bathroom of their own does not vary much from Region to Region. Shared bathrooms are relatively common in London, probably because more houses are shared. In London 60 per cent of the households in the sample have the use of a bathroom, in Scotland only 46 per cent. The other Regions fall between these extremes.

Of the households in Scotland 35 per cent have no bath. This is three times the figure for the sample as a whole.

It is not surprising that considerably more households have the use of bathrooms in the newer than in the older buildings; 93 per cent in the former and 36 per cent in the latter. Of the households living in the older buildings 17 per cent have no bath.

The households living in terrace houses and block flats or tenements are worse off for bathrooms than those living in other types of dwelling; 44 per cent of those in flats or tenements and 13 per cent of those in terrace houses have no bath. It will be remembered that these households are also badly off for water heating appliances.

TABLE 12. BATHING FACILITIES IN URBAN AND RURAL DISTRICTS AND IN THE REGIONS

	NUMBER OF HOUSEHOLDS IN SAMPLE	PERCENTAGE OF HOUSEHOLDS WITH:				
		Own bath-room	Shared bath-room	Bath fitted in kitchen, etc.	Portable bath	No bath
District						
Urban	4,801	46	9	3	29	13
Rural	1,196	47	2	3	39	9
Total ..	5,997	46	8	3	31	12
Region						
Scotland	644	43	3	1	18	35
North	1,677	48	7	4	32	9
Midlands and Wales	1,308	51	5	2	36	6
South and East ..	1,331	45	6	4	38	7
London	1,037	44	16	4	22	14
Total ..	5,997	46	8	3	31	12

TABLE 13. BATHING FACILITIES IN DWELLINGS OF DIFFERENT AGES AND TYPES

	NUMBER OF HOUSEHOLDS IN SAMPLE	PERCENTAGE OF HOUSEHOLDS WITH:				
		Own bath-room	Shared bath-room	Bath fitted in kitchen, etc.	Portable bath	No bath
Age of Building						
Pre-1914	4,095	28	8	3	44	17
Post-1918	1,902	87	6	3	3	1
Total ..	5,997	46	8	3	31	12
Type of Dwelling						
Detached house ..	764	63	5	2	23	7
Semi-detached house	1,782	69	8	2	16	5
Terrace house ..	2,730	30	8	3	46	13
Block flat or tenement	398	31	2	3	20	44
Other flat	323	51	12	6	23	8
Total ..	5,997	46	8	3	31	12

TABLE 14. BATHING FACILITIES IN THE HOUSEHOLDS OF THE ECONOMIC GROUPS

	NUMBER OF HOUSEHOLDS IN SAMPLE	PERCENTAGE OF HOUSEHOLDS WITH:				
		Own bath-room	Shared bath-room	Bath fitted in kitchen, etc.	Portable bath	No bath
Economic Group						
I (Lowest) ..	667	20	8	2	41	29
II	476	31	8	4	39	18
III	2,619	38	7	3	40	12
IV	1,757	63	9	3	20	5
V	478	88	6	2	3	1
Total ..	5,997	46	8	3	31	12

The high proportion of households without a bath in block flats and tenements is probably due to lack of space in the tenement dwellings. The high proportion without a bath in Scotland, where many people live in tenements, may also be due to this.

The differences between economic groups are very marked. Conditions are worst in the lowest group, where there are 29 per cent of households without a bath.

Table 15 gives the proportions of households having a hand basin in the bathroom.

It will be seen that 75 per cent of the households with bathrooms have hand basins; 41 per cent of all the households in the sample have them.

Although the households in Scotland are worse off for bathrooms than those in other Regions, a higher proportion of the bathrooms they have is provided with a hand basin. Also the households in the North of England are better off than those in the South in this respect.

Hand basins are provided in two out of three bathrooms in the households of the three lower economic groups.

TABLE 15. HAND BASINS IN BATHROOMS

	SAMPLE		PERCENTAGE HAVING A HAND BASIN	
	Number of households in sample (*a*)	Number of households with bathrooms in sample (*b*)	Of (*a*)	Of (*b*)
TOTAL	5,997	3,252	41	75
District				
Urban	4,801	2,671	42	75
Rural	1,196	581	37	76
Region				
Scotland	644	295	41	90
North	1,677	917	46	84
Midlands and Wales	1,308	733	39	70
South and East ..	1,331	681	34	70
London	1,037	626	43	71
Economic Group				
I (Lowest)	667	192	19	65
II	476	186	25	65
III	2,619	1,176	29	64
IV	1,757	1,252	59	82
V	478	446	89	95
Age of Building				
Pre-1914	4,095	1,473	27	76
Post-1918	1,902	1,779	70	75
Type of Dwelling				
Detached house ..	764	518	60	88
Semi-detached house	1,782	1,361	58	76
Terrace house ..	2,730	1,038	25	66
Block flat or tenement	398	133	27	82
Other flats	323	202	51	81

Hot Water Supply

BATHS AND WASHING

The different methods used for heating water for baths and the proportions of the households using them are set out in Table 16. It will be seen that, with the exception of the coppers, the figures for the households using the various appliances follow very closely the figures for the households possessing them. The use of solid fuel coppers for this purpose is three times as common in the country households as in the town households; for the gas copper the position is reversed. Coppers also seem to be used more frequently for heating bath water by the households in the South of England than by the households in the North.

Apart from the use of appliances, one in four of all the households in the sample uses kettles and pans for this purpose. The proportion of the households that do not heat water at all for baths is 12 per cent, which agrees with the proportion of the households that have no bath. One per cent of the households have hot water laid on and use that.

TABLE 16. METHODS OF HEATING WATER FOR BATHS IN URBAN AND RURAL DISTRICTS AND IN THE REGIONS

	NUMBER OF HOUSEHOLDS IN SAMPLE	PERCENTAGE OF HOUSEHOLDS USING APPLIANCES ALONE OR IN COMBINATION FOR HEATING WATER FOR BATHS IN WINTER:													
		SOLID FUEL				GAS				ELECTRIC					
		Inset fire	Fire with oven	Inde-pendent boiler	Copper	Single point geyser	Multi-point geyser	Storage heater	Copper	Storage heater	Immer-sion heater	Copper	Hot water laid on	Kettles and pans on stove	No hot water used for baths
District															
Urban ..	4,801	12	19	6	6	9	2	1	10	2	4	1	1	25	12
Rural ..	1,196	5	29	6	17	3	—	—	3	2	1	1	1	30	9
Total ..	5,997	11	21	6	8	8	1	1	9	2	3	1	1	26	12
Region															
Scotland ..	644	22	16	3	3	—	—	—	2	—	3	—	—	21	35
North ..	1,677	12	38	1	3	3	1	1	8	1	5	1	—	27	9
Midlands and Wales	1,308	11	32	3	12	5	1	—	7	1	3	1	1	27	6
South and East	1,331	6	5	11	14	14	2	1	13	4	1	2	1	27	7
London ..	1,037	8	4	17	6	14	3	1	8	2	4	1	2	22	14
Total ..	5,997	11	21	6	8	8	1	1	9	2	3	1	1	26	12
		PERCENTAGE OF HOUSEHOLDS WITH VARIOUS APPLIANCES (Figures extracted from Table 5):													
Total ..	5,997	11	23	7	27	10	2	1	30	3	4	4	1		

Included in the 87 per cent that heat water for baths are the 78 per cent of households that use one method only. The combinations of methods used by the other 9 per cent of households are shown in Table 17.

TABLE 17. COMBINATIONS OF METHODS OF HEATING WATER FOR BATHS IN WINTER

Number of households using more than one method to heat bath water	565
Percentage using kettles and pans plus an appliance	79
Percentage using coppers and appliances other than kettles and pans	11
Percentage using other combinations	10

Four out of five households using more than one method for heating their bath water heat water in kettles and pans to supplement the supply from their appliance. The extent to which this is done is shown in Table 18, which thus gives some measure of the adequacy of the various appliances.

TABLE 18. EXTENT TO WHICH APPLIANCES ARE SUPPLEMENTED BY KETTLES AND PANS

	NUMBER OF HOUSEHOLDS USING APPLIANCE FOR BATHS IN WINTER :	PERCENTAGE OF HOUSEHOLDS USING KETTLES AND PANS IN ADDITION TO APPLIANCE FOR BATHS IN WINTER :
Solid Fuel		
Inset fire	646	6
Fire with oven	1,264	7
Independent boiler ..	385	1
Copper	477	28
Gas		
Single or multi-point geyser	537	10
Storage heater	34	—*
Copper	501	19
Electric		
Storage heater	104	9
Immersion heater	199	—*
Copper	68	—*

* The numbers are too small to give reliable percentages.

TABLE 19. METHODS OF HEATING WATER

		PERCENTAGE			
	NUMBER OF HOUSEHOLDS IN SAMPLE	SOLID FUEL			
		Inset fire	Fire with oven	Inde-pendent boiler	Copper
Economic Group					
I (Lowest)	667	7	15	1	8
II	476	9	20	1	10
III ..	2,619	9	22	2	10
IV	1,757	15	23	10	6
V	478	9	20	28	1
Total ..	5,997	11	21	6	8

At one extreme are the independent boiler and the immersion heater; at the other the solid fuel copper. Of the households using the first two less than 1 per cent find it necessary to use kettles and pans as well, while of those using the third 28 per cent have to do so.

When we come to consider the methods used by the households in the different economic groups we find once more that the figures follow closely those for the appliances installed, except for the coppers. It will be seen (Tables 7 and 19) that in the lowest economic groups about one in four households with coppers have to use them for heating bath water. In the highest economic groups only about one in fifteen households use their coppers for this purpose.

In the highest group 4 per cent of the households depend upon kettles and pans for their hot bath water. In the three lower groups at least one out of every four households depends solely on kettles and pans for this purpose, while a further number find it necessary to supplement the hot water from their appliances in this way.

Similar figures for the methods used to heat water for washing are given in Tables 20 and 21.

As many as 56 per cent of the households in the sample wash with water heated in kettles and pans; in London and the South the proportion is higher than elsewhere. Geysers are less frequently used for washing than for baths; most of them are piped only to the bath. Only 2 per cent of all the households in the sample use the copper to heat water for washing.

Three out of four households in the lowest economic group use kettles and pans to heat water to wash themselves; only one out of five does so in the highest group.

The extent to which the housewives in the sample are satisfied with their supply of hot water for bathing and washing is given in Tables 22, 23, 24 and 25. Many housewives are dissatisfied; only just over a third say they are completely satisfied.

In the lowest economic group 25 per cent of the housewives are completely satisfied with their supply for baths; in the highest group the proportion is 64 per cent. The figures for washing are slightly higher in both cases.

The proportion of housewives who are dissatisfied with their bath water supply falls from 57 per cent in the older to 18 per cent in the newer buildings.

FOR BATHS IN THE HOUSEHOLDS OF THE ECONOMIC GROUPS

OF HOUSEHOLDS USING APPLIANCES ALONE OR IN COMBINATION FOR HEATING WATER FOR BATHS IN WINTER:

GAS				ELECTRIC			Hot water laid on	Kettles and pans on stove	No hot water used for baths
Single point geyser	Multi-point geyser	Storage heater	Copper	Storage heater	Immersion heater	Copper			
4	—	—	7	—	—	1	—	36	29
6	1	—	6	1	1	—	—	34	18
7	1	1	11	1	1	2	—	32	12
10	2	1	8	3	5	1	1	16	5
9	4	1	2	4	15	—	2	4	1
8	1	1	8	2	3	1	1	26	12

TABLE 20. METHODS OF HEATING WATER FOR WASHING IN URBAN AND RURAL DISTRICTS AND IN THE REGIONS

	NUMBER OF HOUSEHOLDS IN SAMPLE	PERCENTAGE OF HOUSEHOLDS USING APPLIANCES ALONE OR IN COMBINATION FOR HEATING WATER FOR WASHING IN WINTER:												
		SOLID FUEL				GAS				ELECTRIC			Hot water laid on	Kettles and pans on stove
		Inset fire	Fire with oven	Inde-pendent boiler	Copper	Single point geyser	Multi-point geyser	Storage heater	Copper	Storage heater	Immer-sion heater	Copper		
District														
Urban	4,801	12	20	6	1	5	1	1	1	3	3	—	1	56
Rural	1,196	6	30	6	2	1	—	—	—	2	—	—	1	58
Total	5,997	11	22	6	1	4	1	1	1	3	2	—	1	56
Region														
Scotland	644	23	17	2	1	2	—	—	—	1	2	—	—	56
North	1,677	12	39	1	—	4	1	1	1	1	4	—	—	46
Midlands and Wales	1,308	11	33	2	2	3	1	—	1	2	2	—	—	51
South and East ..	1,331	6	5	11	2	5	2	1	2	6	1	—	—	69
London	1,037	8	4	16	—	7	3	—	1	3	3	—	2	64
Total	5,997	11	22	6	1	4	1	1	1	3	2	—	1	56
		PERCENTAGE WITH VARIOUS APPLIANCES: (Figures extracted from Table 5)												
Total	5,997	11	23	7	27	10	2	1	30	3	4	4	1	

TABLE 21. METHODS OF HEATING WATER FOR WASHING IN THE HOUSEHOLDS OF THE ECONOMIC GROUPS

	NUMBER OF HOUSEHOLDS IN SAMPLE	PERCENTAGE OF HOUSEHOLDS USING APPLIANCES ALONE OR IN COMBINATION FOR HEATING WATER FOR WASHING IN WINTER:												
		SOLID FUEL				GAS				ELECTRIC				
		Inset fire	Fire with oven	Independent boiler	Copper	Single point geyser	Multi-point geyser	Storage heater	Copper	Storage heater	Immersion heater	Copper	Hot water laid on	Kettles and pans on stove
Economic Group														
I (Lowest)	667	7	16	1	1	3	—	—	1	1	—	—	—	76
II	476	9	21	1	1	2	1	—	1	1	1	—	—	70
III	2,619	10	22	2	1	3	1	1	1	2	1	—	—	64
IV	1,757	15	24	10	1	6	2	1	1	5	4	—	1	45
V	478	9	20	28	—	5	4	2	—	5	12	—	2	18
Total	5,997	11	22	6	1	4	1	1	1	3	2	—	1	56

TABLE 22. EXTENT OF SATISFACTION WITH HOT WATER SUPPLY FOR BATHS AND WASHING IN URBAN AND RURAL DISTRICTS AND IN THE REGIONS

	NUMBER OF HOUSEHOLDS IN SAMPLE	PERCENTAGE OF HOUSEWIVES EXPRESSING DIFFERENT DEGREES OF SATISFACTION WITH HOT WATER SUPPLY IN WINTER FOR:							
		BATHS				WASHING			
		Completely satisfied	Moderately satisfied	Dissatisfied	Doubtful	Completely satisfied	Moderately satisfied	Dissatisfied	Doubtful
District									
Urban	4,801	34	21	44	1	39	24	37	—
Rural	1,196	36	17	47	—	39	18	42	1
Total	5,997	35	20	44	1	39	23	38	—
Region									
Scotland	644	35	15	49	1	45	19	36	—
North	1,677	38	19	42	1	42	20	37	1
Midlands and Wales	1,308	42	18	39	1	47	21	31	1
South and East ..	1,331	29	24	47	—	29	27	44	—
London	1,037	26	24	49	1	30	28	42	—
Total	5,997	35	20	44	1	39	23	38	—

TABLE 23. EXTENT OF SATISFACTION WITH HOT WATER SUPPLY FOR BATHS AND WASHING IN THE ECONOMIC GROUPS

	NUMBER OF HOUSEHOLDS IN SAMPLE	PERCENTAGE OF HOUSEWIVES EXPRESSING DIFFERENT DEGREES OF SATISFACTION WITH HOT WATER SUPPLY IN WINTER FOR:							
		BATHS				WASHING			
		Completely satisfied	Moderately satisfied	Dissatisfied	Doubtful	Completely satisfied	Moderately satisfied	Dissatisfied	Doubtful
Economic Group									
I (Lowest) ..	677	25	20	52	3	28	26	45	1
II	476	26	20	53	1	29	23	47	1
III	2,619	28	19	53	—	32	22	46	—
IV	1,757	43	24	33	—	47	26	27	—
V	478	64	19	17	—	68	16	16	—
Total	5,997	35	20	44	1	39	23	38	—

TABLE 24. EXTENT OF SATISFACTION WITH HOT WATER SUPPLY FOR BATHS AND WASHING IN BUILDINGS OF DIFFERENT AGES

	NUMBER OF HOUSEHOLDS IN SAMPLE	PERCENTAGE OF HOUSEWIVES EXPRESSING DIFFERENT DEGREES OF SATISFACTION WITH HOT WATER SUPPLY IN WINTER FOR:							
		BATHS				WASHING			
		Completely satisfied	Moderately satisfied	Dissatisfied	Doubtful	Completely satisfied	Moderately satisfied	Dissatisfied	Doubtful
Age of Building									
Pre-1914	4,095	23	19	57	1	27	23	49	1
Post-1918	1,902	59	23	18	—	63	22	15	—
Total	5,997	35	20	44	1	39	23	38	—

TABLE 25. EXTENT OF SATISFACTION WITH HOT WATER SUPPLY IN WINTER WHERE ONE METHOD IS USED FOR HEATING BATH WATER

	NUMBER OF HOUSEHOLDS IN SAMPLE (ALL USING ONE METHOD ONLY)	PERCENTAGE OF HOUSEWIVES EXPRESSING DIFFFERENT DEGREES OF SATISFACTION WITH HOT WATER SUPPLY FOR BATHS			
		Completely satisfied	Moderately satisfied	Dissatisfied	Doubtful
STORAGE HEATERS					
Solid Fuel					
Inset fire	563	65	28	7	—
Fire with oven ..	1,114	69	20	11	—
Independent boiler	369	71	24	5	—
Electric					
Storage heater ..	86	60	32	8	—
Immersion heater	199	80	15	5	—
INSTANTANEOUS					
Gas					
Single point geyser	329	36	38	26	—
Multi-point geyser	72	47	31	22	—
COPPERS					
Solid fuel	311	5	24	70	1
Gas	329	16	21	63	—
Electric	52	4	36	60	—
Hot water laid on ..	37	59	27	14	—
Kettles and pans ..	1,100	3	11	85	1

Where one method only is used for heating bath water the storage heaters would appear to be the most satisfactory group of appliances. Within this group the immersion heater and the independent boiler were considered the most satisfactory. As a source of bath water the gas geysers are not as satisfactory and coppers are even less so.

It is not surprising that heating water in kettles and pans is considered the least satisfactory method.

CLOTHES WASHING

Tables 26 and 27 give the proportions of households heating water for washing clothes in winter by different methods.

Most of the appliances that are piped to the sink are used for this purpose. All coppers that are used at all are of course used to heat water for washing clothes. In addition 37 per cent of the households use kettles and pans to heat water for this purpose ; the proportion rises as high as 49 per cent in London, where coppers are less frequently found. Kettles and pans alone are relied on by 19 per cent of the households.

The proportion of the households using kettles and pans to heat water for washing clothes falls from 54 per cent in the lowest economic group to 14 per cent in the highest.

TABLE 26. METHODS OF HEATING WATER FOR WASHING CLOTHES IN URBAN AND RURAL DISTRICTS AND IN THE REGIONS

	NUMBER OF HOUSEHOLDS IN SAMPLE	PERCENTAGE OF HOUSEHOLDS USING APPLIANCES ALONE OR IN COMBINATION FOR HEATING WATER FOR WASHING CLOTHES IN WINTER :												
		SOLID FUEL				GAS				ELECTRIC				
		Inset fire	Fire with oven	Independent boiler	Copper	Single point geyser	Multi-point geyser	Storage heater	Copper	Storage heater	Immersion heater	Copper	Hot water laid on	Kettles and pans on stove
District														
Urban	4,801	10	16	6	17	4	1	1	32	2	3	4	1	38
Rural	1,196	5	27	6	43	1	—	—	12	1	1	4	1	40
Total	5,997	9	18	6	22	3	1	1	28	2	2	4	1	37
Region														
Scotland	644	21	16	3	30	1	—	—	15	1	2	—	—	29
North	1,677	8	32	1	19	3	—	1	39	1	4	6	—	37
Midlands and Wales	1,308	9	27	2	31	2	1	—	29	2	2	3	1	34
South and East ..	1,331	5	4	10	25	3	2	1	28	4	1	4	—	37
London	1,037	6	3	16	9	6	3	—	16	3	3	3	2	49
Total	5,997	9	18	6	22	3	1	1	28	2	2	4	1	37
		PERCENTAGE WITH VARIOUS APPLIANCES (Figures extracted from Table 5)												
Total	5,997	11	23	7	27	10	2	1	30	3	4	4	1	

TABLE 27. METHODS OF HEATING WATER FOR WASHING CLOTHES IN THE HOUSEHOLDS OF THE ECONOMIC GROUPS

	NUMBER OF HOUSEHOLDS IN SAMPLE	PERCENTAGE OF HOUSEHOLDS USING APPLIANCES ALONE OR IN COMBINATION FOR HEATING WATER FOR WASHING CLOTHES IN WINTER :												
		SOLID FUEL				GAS				ELECTRIC			Hot water laid on	Kettles and pans on stove
		Inset fire	Fire with oven	Inde-pendent boiler	Copper	Single point geyser	Multi-point geyser	Storage heater	Copper	Storage heater	Immer-sion heater	Copper		
Economic Group														
I (Lowest) ..	667	6	13	1	24	2	—	—	18	1	—	1	—	54
II	476	8	17	1	29	2	1	—	22	1	1	1	—	47
III	2,619	8	18	2	26	2	1	—	29	2	1	4	—	41
IV	1,757	12	20	9	17	5	2	1	33	4	4	4	1	29
V	478	7	16	27	9	5	3	2	19	4	12	5	2	14
Total	5,997	9	18	6	22	3	1	1	28	2	2	4	1	37

The extent to which the housewives are satisfied with their supply of hot water for washing clothes is dealt with in Tables 28, 29 and 30.

One in three housewives is dissatisfied and 43 per cent are completely satisfied. Dissatisfaction is greatest among the households in London where the lowest proportion of households with coppers was found, while satisfaction is greatest in the Midlands and Wales where coppers are commonest.

Only one out of three of the housewives living in a pre-1914 building is completely satisfied, but two out of three living in post-1918 buildings are completely satisfied. It is worth noting that 53 per cent of the households living in

TABLE 28. EXTENT OF SATISFACTION WITH HOT WATER SUPPLY FOR WASHING CLOTHES IN URBAN AND RURAL DISTRICTS AND IN THE REGIONS

	NUMBER OF HOUSEHOLDS IN SAMPLE	PERCENTAGE OF HOUSEWIVES EXPRESSING DIFFERENT DEGREES OF SATISFACTION WITH HOT WATER SUPPLY FOR WASHING CLOTHES IN WINTER			
		Completely satisfied	Moderately satisfied	Dissatisfied	Doubtful
District					
Urban	4,801	43	23	33	1
Rural	1,196	42	20	38	—
Total	5,997	43	22	34	1
Region					
Scotland	644	44	20	35	1
North	1,677	46	21	32	1
Midlands and Wales	1,308	51	22	26	1
South and East	1,331	39	25	35	1
London	1,037	31	25	43	1
Total	5,997	43	22	34	1

TABLE 29. EXTENT OF SATISFACTION WITH HOT WATER SUPPLY FOR WASHING CLOTHES IN BUILDINGS OF DIFFERENT AGES

	NUMBER OF HOUSEHOLDS IN SAMPLE	PERCENTAGE OF HOUSEWIVES EXPRESSING DIFFERENT DEGREES OF SATISFACTION WITH HOT WATER SUPPLY FOR WASHING CLOTHES IN WINTER			
		Completely satisfied	Moderately satisfied	Dissatisfied	Doubtful
Age of Building					
Pre-1914	4,095	32	24	43	1
Post-1918	1,902	67	21	12	—
Total	5,997	43	22	34	1

newer buildings have gas or electric coppers as against 26 per cent in older buildings. These coppers were said to be satisfactory by a greater proportion of the housewives than was the solid fuel copper, which predominates in the older buildings.

The ratio of satisfied to dissatisfied housewives rises sharply from 3 : 2 for the households in the three lower economic groups to 3 : 1 for those in Group IV and to 6 : 1 for those in Group V, the highest. In considering Table 30 it should be noted that the highest economic group is also the greatest user of laundries.

TABLE 30. EXTENT OF SATISFACTION WITH HOT WATER SUPPLY FOR WASHING CLOTHES IN THE HOUSEHOLDS OF THE ECONOMIC GROUPS

	NUMBER OF HOUSEHOLDS IN SAMPLE	PERCENTAGE OF HOUSEWIVES EXPRESSING DIFFERENT DEGREES OF SATISFACTION WITH HOT WATER SUPPLY FOR WASHING CLOTHES IN WINTER			
		Completely satisfied	Moderately satisfied	Dissatisfied	Doubtful
Economic Group					
I (Lowest) ..	667	32	27	40	1
II	476	33	23	43	1
III	2,619	38	21	40	1
IV	1,757	51	25	24	—
V	478	70	16	14	—
Total ..	5,997	43	22	34	1

DISH WASHING AND HOUSE CLEANING

Tables 31 and 32 show the proportions of the households using different methods to heat water for dish washing during the winter months.

A higher proportion of the households, 60 per cent, make use of kettles and pans to heat water for dish washing than for any other of the purposes considered. In the South and East Region the proportion is as high as 70 per cent. Coppers are rarely used for this purpose.

Again the lowest economic group has the highest proportion of households using kettles and pans; 78 per cent heat water for dish washing in this way.

TABLE 31. METHODS OF HEATING WATER FOR DISH WASHING IN URBAN AND RURAL DISTRICTS AND IN THE REGIONS

	NUMBER OF HOUSEHOLDS IN SAMPLE	PERCENTAGE OF HOUSEHOLDS USING APPLIANCES ALONE OR IN COMBINATION FOR HEATING WATER FOR DISH WASHING IN WINTER:												
		SOLID FUEL				GAS				ELECTRIC			Hot water laid on	Kettles and pans on stove
		Inset fire	Fire with oven	Independent boiler	Copper	Single point geyser	Multi-point geyser	Storage heater	Copper	Storage heater	Immersion heater	Copper		
District														
Urban	4,801	12	20	6	—	4	1	1	—	3	3	—	1	60
Rural	1,196	6	30	6	1	1	—	—	—	2	—	—	1	58
Total	5,997	11	22	6	—	4	1	1	—	3	2	—	1	60
Region														
Scotland	644	22	17	2	1	2	—	—	—	1	1	—	—	58
North	1,677	12	38	1	—	4	1	1	1	1	4	—	—	53
Midlands and Wales	1,308	11	33	2	1	3	1	1	—	2	2	—	1	52
South and East ..	1,331	6	5	11	1	4	2	1	1	7	1	—	—	70
London	1,037	8	4	16	—	6	2	1	—	3	2	—	2	67
Total	5,997	11	22	6	—	4	1	1	—	3	2	—	1	60
		PERCENTAGE WITH VARIOUS APPLIANCES (Figures extracted from Table 5)												
Total	5,997	11	23	7	27	10	2	1	30	3	4	4	1	

TABLE 32. METHODS OF HEATING WATER FOR DISH WASHING IN THE HOUSEHOLDS OF THE ECONOMIC GROUPS

	NUMBER OF HOUSEHOLDS IN SAMPLE	PERCENTAGE OF HOUSEHOLDS USING APPLIANCES ALONE OR IN COMBINATION FOR HEATING WATER FOR DISH WASHING IN WINTER :												
		SOLID FUEL				GAS				ELECTRIC			Hot water laid on	Kettles and pans on stove
		Inset fire	Fire with oven	Independent boiler	Copper	Single point geyser	Multi-point geyser	Storage heater	Copper	Storage heater	Immersion heater	Copper		
Economic Group														
I (Lowest) ..	667	7	16	1	—	3	—	1	—	1	—	—	—	78
II	476	10	21	1	—	2	1	—	—	1	1	—	—	71
III	2,619	10	22	2	—	3	1	1	—	2	1	—	—	66
IV	1,757	15	24	10	1	5	2	1	—	5	3	—	1	49
V	478	9	20	28	1	4	3	2	—	4	12	—	2	23
Total	5,997	11	22	6	—	4	1	1	—	3	2	—	1	60

Tables 33 and 34 show the proportions of the households using different methods to heat water for house cleaning during the winter months.

Rather fewer households use kettles and pans to heat water for house cleaning than for dish washing; the difference is due to the 5 per cent of households that use solid fuel or gas coppers for this purpose.

There is little variation from one economic group to the next in the proportions using coppers to heat water for house cleaning. This is in contrast with the marked variation in the case of bath water, where coppers are used by 16 per cent of the households in the lowest group and by only 3 per cent of those in the highest.

The results of asking the housewives whether they were satisfied with their supply of hot water for dish washing and house cleaning are set out in Tables 35, 36 and 37.

It was found that 40 per cent of the housewives are completely satisfied with their supplies for these purposes, about the same proportion as for personal washing. But here again a substantial proportion, 37 per cent, are dissatisfied (or are doubtful).

TABLE 33. METHODS OF HEATING WATER FOR HOUSE CLEANING IN URBAN AND RURAL DISTRICTS AND IN THE REGIONS

	NUMBER OF HOUSEHOLDS IN SAMPLE	PERCENTAGE OF HOUSEHOLDS USING APPLIANCES ALONE OR IN COMBINATION FOR HEATING WATER FOR HOUSE CLEANING IN WINTER :												
		SOLID FUEL				GAS				ELECTRIC				
		Inset fire	Fire with oven	Independent boiler	Copper	Single point geyser	Multi-point geyser	Storage heater	Copper	Storage heater	Immersion heater	Copper	Hot water laid on	Kettles and pans on stove
District														
Urban	4,801	12	20	6	2	4	1	1	3	3	3	—	1	56
Rural	1,196	6	30	6	7	1	—	—	1	2	—	—	1	56
Total	5,997	11	22	6	3	4	1	1	2	3	2	—	1	56
Region														
Scotland	644	22	17	2	1	2	—	—	—	1	2	—	—	57
North	1,677	12	39	1	2	4	1	1	3	1	4	—	—	47
Midlands and Wales	1,308	11	33	3	8	3	1	—	5	2	2	1	1	50
South and East ..	1,331	6	5	11	1	4	2	1	1	6	1	—	—	68
London	1,037	8	4	16	1	6	2	1	1	3	2	—	2	62
Total	5,997	11	22	6	3	4	1	1	2	3	2	—	1	56
		PERCENTAGE WITH VARIOUS APPLIANCES (Figures extracted from Table 5)												
Total	5,997	11	23	7	27	10	2	1	30	3	4	4	1	

TABLE 34. METHODS OF HEATING WATER FOR HOUSE CLEANING IN THE HOUSEHOLDS OF THE ECONOMIC GROUPS

	NUMBER OF HOUSEHOLDS IN SAMPLE	PERCENTAGE OF HOUSEHOLDS USING APPLIANCES ALONE OR IN COMBINATION FOR HEATING WATER FOR HOUSE CLEANING IN WINTER :												
		SOLID FUEL				GAS				ELECTRIC			Hot water laid on	Kettles and pans on stove
		Inset fire	Fire with oven	Independent boiler	Copper	Single point geyser	Multi-point geyser	Storage heater	Copper	Storage heater	Immersion heater	Copper		
Economic Group														
I (Lowest) ..	667	7	15	1	2	3	—	—	1	1	—	—	—	77
II	476	10	21	1	4	2	1	—	2	1	1	—	—	69
III	2,619	10	22	2	3	3	1	1	2	2	—	—	—	64
IV	1,757	15	24	10	2	5	2	1	3	5	3	—	1	43
V	478	9	20	28	2	4	3	2	2	4	12	—	2	18
Total	5,997	11	22	6	3	4	1	1	2	3	2	—	1	56

TABLE 35. EXTENT OF SATISFACTION WITH HOT WATER SUPPLY FOR DISH WASHING AND HOUSE CLEANING IN URBAN AND RURAL DISTRICTS AND IN THE REGIONS

	NUMBER OF HOUSEHOLDS IN SAMPLE	PERCENTAGE OF HOUSEWIVES EXPRESSING DIFFERENT DEGREES OF SATISFACTION WITH HOT WATER SUPPLY IN WINTER FOR :							
		DISH WASHING				HOUSE CLEANING			
		Completely satisfied	Moderately satisfied	Dissatisfied	Doubtful	Completely satisfied	Moderately satisfied	Dissatisfied	Doubtful
District									
Urban	4,801	40	25	35	—	40	24	35	1
Rural	1,196	40	17	42	1	40	17	42	1
Total	5,997	40	23	37	—	40	23	36	1
Region									
Scotland	644	45	19	36	—	45	19	36	—
North	1,677	43	20	36	1	43	20	36	1
Midlands and Wales	1,308	50	22	28	—	51	21	27	1
South and East ..	1,331	29	27	43	1	29	27	43	1
London	1,037	32	29	39	—	33	28	38	1
Total	5,997	40	23	37	—	40	23	36	1

In both cases the proportion of dissatisfied housewives falls from 44 per cent in the lowest economic group to 15 per cent in the highest.

47 per cent of housewives in older dwellings express dissatisfaction (or are doubtful) with their hot water supplies for dish washing and house cleaning as against 14 per cent for those in newer dwellings. This of course reflects the fact that the older buildings have a greater proportion of the older and less satisfactory solid fuel coppers.

TABLE 36. EXTENT OF SATISFACTION WITH HOT WATER SUPPLY FOR DISH WASHING AND HOUSE CLEANING IN THE ECONOMIC GROUPS

	NUMBER OF HOUSEHOLDS IN SAMPLE	PERCENTAGE OF HOUSEWIVES EXPRESSING DIFFERENT DEGREES OF SATISFACTION WITH HOT WATER SUPPLY IN WINTER FOR:							
		DISH WASHING				HOUSE CLEANING			
		Completely satisfied	Moderately satisfied	Dissatisfied	Doubtful	Completely satisfied	Moderately satisfied	Dissatisfied	Doubtful
Economic Group									
I (Lowest)	667	30	25	44	1	31	24	44	1
II ..	476	30	24	45	1	29	24	46	1
III ..	2,619	33	22	44	1	33	22	44	1
IV ..	1,757	49	26	25	—	50	26	24	—
V ..	478	69	16	15	—	70	15	15	—
Total ..	5,997	40	23	37	—	40	23	36	1

TABLE 37. EXTENT OF SATISFACTION WITH HOT WATER SUPPLY FOR DISH WASHING AND HOUSE CLEANING IN BUILDINGS OF DIFFERENT AGES

	NUMBER OF HOUSEHOLDS IN SAMPLE	PERCENTAGE OF HOUSEWIVES EXPRESSING DIFFERENT DEGREES OF SATISFACTION WITH HOT WATER SUPPLY IN WINTER FOR:							
		DISH WASHING				HOUSE CLEANING			
		Completely satisfied	Moderately satisfied	Dissatisfied	Doubtful	Completely satisfied	Moderately satisfied	Dissatisfied	Doubtful
Age of Building									
Pre-1914..	4,095	29	24	47	—	29	24	46	1
Post-1918	1,902	64	22	14	—	65	21	14	—
Total ..	5,997	40	23	37	—	40	23	36	1

HOT WATER FACILITIES IN RELATION TO RECOMMENDATIONS IN THE EGERTON REPORT

The Heating and Ventilation (Reconstruction) Committee of the Building Research Board recommended that houses should have a piped supply of hot water and convenient means of bringing a quantity of water to the boil. In order to see the extent to which this standard is realised, the households in the sample have been divided into groups having :—

1. A piped supply of hot water and a copper ;
2. A piped supply of hot water but no copper ;
3. A copper but no piped supply of hot water ;
4. Neither a copper nor a piped supply of hot water.

It was found that 33 per cent of the households are in Group 1, 23 per cent in Group 2, 28 per cent in Group 3 and 16 per cent in Group 4.

Table 38 shows how this distribution among the four groups varies with locality.

The households in urban districts are better provided with piped hot water than those in rural districts. The percentage of rural households with some form of copper does not differ appreciably from that of urban households. There is, however, an important difference. In the country households the solid fuel copper is often the sole appliance, while in urban households gas coppers are commoner and, as shown later, in Table 43, they are often found in conjunction with a piped hot water supply.

Not only do many of the households lack a piped supply of hot water, but many are without a piped supply of cold water, a bathroom or a hand basin. In fact, 7 per cent of the households are without a piped supply of cold water ; most of these live in buildings erected before 1914. Conditions are considerably worse in rural districts, where 21 per cent of the households lack this essential amenity.

Forty-six per cent of the households have bathrooms and a further 8 per cent share a bathroom. Thus only 54 per cent of the households have access to a bathroom. This proportion varies from 46 per cent in Scotland to 60 per cent in London.

As many as 12 per cent of the households have no bath whatsoever, 31 per cent have only a portable bath and 3 per cent have a bath fitted in some room other than a bathroom. There are relatively fewer shared bathrooms in rural areas and rather fewer households without a bath, but there is a higher proportion with portable baths. The proportion with portable baths is low in Scotland and London, but the proportion without a bath at all is exceptionally high (35 per cent) in Scotland.

Of the households living in the older buildings 64 per cent do not have access to a bathroom ; in the newer buildings the proportion is 7 per cent. The figures for the lowest and the highest economic groups show an even greater difference, 72 per cent as against 6 per cent.

Even when a household in the lowest economic group has access to a bathroom it is less likely to find a hand basin there ; 19 per cent of the households in the lowest group have hand basins as compared with 89 per cent in the highest group. For the sample as a whole the proportion is 41 per cent.

A piped supply of hot water to the bath is to be found in only 51 per cent of the households, only 36 per cent have hot water piped to sink, bath and hand basin while 44 per cent have no piped hot water.

It might be expected that there would be some relation between the arrangements for the supply of hot water and the bathing facilities available. This is confirmed by the figures given in Table 39. Of the households with a piped supply of hot water, only about 10 per cent are without a bathroom, while 90 per cent of the households without piped hot water are also without a bathroom.

TABLE 38. HOT WATER FACILITIES IN DIFFERENT PARTS OF GREAT BRITAIN*

	NUMBER OF HOUSEHOLDS IN SAMPLE	PERCENTAGE OF HOUSEHOLDS WITH :			
		Piped hot water and copper	Piped hot water only	Copper only	No piped hot water or copper
Scotland					
Rural	196	30	23	32	15
Urban	448	22	23	20	35
North					
Rural	207	42	13	26	19
Urban	1,470	49	16	27	8
Midlands and Wales					
Rural	326	35	17	32	16
Urban	982	41	17	31	11
South and East					
Rural	467	11	25	47	17
Urban	864	29	26	32	13
London					
Rural	—	—	—	—	—
Urban	1,037	18	41	18	23
Total : Rural ..	1,196	26	20	37	17
Urban ..	4,801	34	25	26	15
Total	5,997	33	23	28	16

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* This sample was designed to cover urban and rural areas nationally ; it was not designed to give separate figures for rural areas in each of the regions. The rural figures should therefore be treated with reserve.

TABLE 39. RELATION BETWEEN HOT WATER FACILITIES AND BATHING FACILITIES

	NUMBER OF HOUSEHOLDS	PERCENTAGE OF HOUSEHOLDS WITH:			
		Bathroom	Fitted bath not in bathroom	Portable bath	No bath
Hot Water Supply					
Piped hot and copper	1,971	87	3	9	1
Piped hot only ..	1,396	92	2	4	2
Copper only ..	1,693	11	5	65	19
Neither piped hot nor copper	937	8	1	57	34
Piped hot	3,367	89	2	7	2
No piped hot ..	2,630	10	3	63	24
All households ..	5,997	54	3	31	12

It is appropriate here to point out that the dwellings built after 1918 are much better in respect of hot water supply than those erected before 1914; 10 per cent of the older dwellings are without a piped supply of cold water while for the newer buildings the figure is only 1 per cent. The households living in the older and newer dwellings have been classified according to the four groups defined on page 38 with the following result:—

	PRE-1914	POST-1918
Group 1	21%	59%
2	20%	30%
3	37%	9%
4	22%	2%

These figures show clearly the great advances made in the last 30 years.

METHODS OF HEATING PIPED SUPPLIES

As the method by which the water for the piped supply is heated may be of interest, the relevant figures are given in Table 40 for 3,297 of the households, *i.e.*, all the households with piped hot water except those with hot water laid on from outside or with piped coppers only.

This Table shows that among households with a piped hot water supply, the fire with oven is the appliance most often found in urban and rural districts in the North and the Midlands and Wales Regions, and in the rural districts of all the Regions except the South and East. In the North Region it is followed by the inset fire, which is the commonest appliance in the urban districts of Scotland. Independent boilers are found chiefly in the South. Gas and electric appliances are found chiefly in towns and are much commoner in the South than in the North, either as the sole appliance or in combination with one or other of the solid fuel appliances.

A possible explanation of the distribution is that in Scotland space heating and in the North of England and in rural districts cooking facilities and space heating are regarded as the chief requirements for domestic heating. Since some appliance must be provided for these purposes it is reasonable to arrange for it to heat the water as well. In the South space heating is not necessary throughout a large part of the year, and so there is a tendency to heat water by independent means, or to install auxiliary gas or electric heaters for use when the solid fuel appliance is not required.

TABLE 40. APPLIANCES BY WHICH WATER IS HEATED IN DIFFERENT PARTS OF GREAT BRITAIN*

	NUMBER OF HOUSEHOLDS IN SAMPLE	PERCENTAGE OF HOUSEHOLDS IN SAMPLE HAVING PIPED HOT WATER	PERCENTAGE OF HOUSEHOLDS WITH PIPED HOT WATER HAVING:						
			Inset fire only	Fire with oven only	Independent boiler only	Gas or electricity only	Inset fire plus gas or electricity	Fire with oven plus gas or electricity	Independent boiler plus gas or electricity
Scotland									
Rural	196	53	23	66	9	1	1	—	—
Urban	448	45	60	19	3	7	7	1	3
North									
Rural	207	55	5	84	1	2	—	8	—
Urban	1,470	65	20	55	1	12	6	6	—
Midlands and Wales									
Rural	326	52	6	81	4	6	1	1	1
Urban	982	58	23	43	4	19	6	5	—
South and East									
Rural	467	36	13	18	29	33	2	2	3
Urban	864	55	10	7	19	58	3	—	3
London									
Rural	—	—	—	—	—	—	—	—	—
Urban	1,037	59	13	7	27	38	7	1	7

* This sample was designed to cover urban and rural areas nationally; it was not designed to give separate figures for rural areas in each of the regions. The rural figures should therefore be treated with reserve. Households with hot water laid on from outside or with piped coppers only are excluded.

LAGGING

Inquiry was made into the extent to which hot water tanks and pipes are lagged, as this affects the efficiency of some of the appliances. The hot water pipe considered was that leading from the boiler to the tank, since this is the pipe through which there is a continuous circulation of water. The housewives were asked whether the tanks and pipes were lagged; the cases in which they did not know were few. The results are given in Table 41.

Lagged hot water tanks are the exception rather than the rule. In 12 per cent of the households where the appliance is a fire with oven, the tanks are lagged. This figure rises to 17 per cent for the inset fires, 21 per cent for the independent boiler, and 25 per cent for the immersion heater. Lagged hot water pipes were found in even fewer households.

This lack of lagging must result in a serious wastage of heat, especially in the case of the independent boiler which in two out of three households is kept going continuously. Based on estimates for the differences in heat losses for lagged and unlagged systems given in the Egerton Report, it would appear that for the independent boilers alone, this wastage in terms of fuel could amount to more than a million tons of coke a year. It is possible that well over three quarters of these appliances are not working at the maximum efficiency owing to lack of lagging.

TABLE 41. LAGGING

	NUMBER OF HOUSEHOLDS IN SAMPLE	PERCENTAGE OF HOUSEHOLDS WITH:		
		Lagged	Not lagged	Don't know
Inset fire				
Tank	688	17	81	2
Hot pipe ..	688	16	82	2
Fire with oven				
Tank	1,350	12	87	1
Hot pipe	1,350	11	89	—
Independent boiler				
Tank	391	21	76	3
Hot pipe ..	391	16	81	3
Immersion heater				
Tank	249	25	74	1
Hot pipe ..	249	14	85	1

Conclusions

In what follows an attempt is made to summarise the general conclusions to be drawn from the data presented in the foregoing sections.

HOUSEHOLDS HAVING ACCESS TO CERTAIN WATER HEATING APPLIANCES

Fifteen per cent of households have no water heating appliances whatever. A further 28 per cent of households have nothing but a copper, which cannot be said to provide an adequate supply of hot water. Thus 43 per cent of all households must rely on a copper or on kettles and pans for all their hot water for no matter what purpose.

COMBINATIONS OF APPLIANCES

Table 42 gives the number of immersion heaters used in conjunction with solid fuel appliances, but many other combinations of appliances were noted in the sample. The number of combinations found was more than 100, but as the number of households in most cases is very small they are of little interest except as an indication of the diversity of methods that can be used to provide hot water for domestic use. The numbers of households in the sample having nil, 1, 2, 3 or 4 means of heating water other than kettles and pans are 896, 2,788, 2,059, 247 and 7. Less than 5 per cent of the households in the sample have more than two appliances.

TABLE 42. HOUSEHOLDS HAVING ACCESS TO CERTAIN WATER HEATING APPLIANCES

	NUMBER OF HOUSEHOLDS IN SAMPLE	PERCENTAGE OF TOTAL NUMBER OF HOUSEHOLDS
*Solid Fuel**		68
Inset fire	688	11
Fire with oven	1,350	23
Independent boiler	391	7
Copper	1,613	27
Gas		44
One single point geyser	582	10
Two single point geysers	47	1
Multi-point geyser	90	2
Storage heater	54	1
Copper	1,826	30
Electric		7
Storage heater	207	3
Instantaneous heater	19	—
Copper	232	4
*Electric and Solid Fuel**		
Immersion heater with inset fire	127	2
Immersion heater with fire with oven	81	1
Immersion heater with independent boiler	41	1
Hot water laid on	47	1
No appliance	896	15
Total households	5,997	

* The total numbers of solid fuel appliances are the sums of the numbers given in these two categories, *e.g.* the total number of inset fires found in the sample was 815.

It may therefore be of value to give in Table 43 the numbers having any one specified type alone or with one other. In preparing this Table all gas appliances for heating water except gas coppers, have been grouped under the heading "piped gas"; similarly, the heading "piped electric" includes all electric water heaters except electric coppers. This accounts for the 27 households with two piped gas appliances and the one with two piped electric appliances in the Table.

Table 43 shows that the solid fuel copper is often the sole appliance. Gas coppers are found alone, with other gas appliances, or with inset fires or fires with oven. Fewer households with independent boilers have coppers than those with other solid fuel water heaters.

TABLE 43. HOUSEHOLDS HAVING APPLIANCES ALONE OR IN COMBINATION WITH ONE OTHER APPLIANCE

	Alone	Inset fire	Fire with oven	Independent boiler	Piped gas	Piped electric	Hot water laid on	Solid fuel copper	Gas copper	Electric copper
INSET FIRE	260	–								
FIRE WITH OVEN	328	–	–							
INDEPENDENT BOILER	271	2	–	–						
PIPED GAS	243	14	7	21	27*					
PIPED ELECTRIC	66	62	33	38	14	1*				
HOT WATER LAID ON	31	–	–	1	2	1	–			
SOLID FUEL COPPER	1,011	39	398	18	68	23	8	–		
GAS COPPER	526	311	522	53	209	27	1	22	–	
ELECTRIC COPPER	52	31	68	5	8	22	–	3	–	–

* See text.

DISTRIBUTION OF APPLIANCES

There are considerable variations in the distribution of the different appliances among the different types of household. This is illustrated in Table 44, in which it is possible to compare the distribution of appliances with the distribution of households.

In this Table the percentage figures shown for the appliances must be related to the proportion of households in each category of the samples. For example, 90 per cent of inset fires are shown as installed in urban households and 10 per cent in rural households. Urban households are four times as numerous as rural households, so that the relative frequency of inset fires as between urban and rural households is 9 : 4. (See also Table 5, where this ratio appears as 13 : 6.)

One third of all the solid fuel coppers occur in rural areas, whereas only 8 per cent of them are to be found in London. Gas and electric coppers are very common in the North Region.

Between them Scotland and London account for almost half the households without any appliance whatever. Conditions are far worse in the older buildings, in which 96 per cent of such households are to be found, than in the newer buildings. Only 1 per cent of households without an appliance are to be found in the highest economic group compared with 22 per cent in the lowest.

NOTES ON INDIVIDUAL APPLIANCES

Inset Fires. Water is heated by inset fires in 14 per cent of the households in Great Britain. These appliances are commoner in the North than in the South, though London has its fair share. They are found in the households of all economic groups and 99 per cent of them are piped to the sink and 96 per cent to the bath. Of the households having inset fires 58 per cent have coppers also, 17 per cent have an auxiliary electric method of heating the piped supply, *e.g.*, an immersion heater, and 4 per cent have an auxiliary gas method, *e.g.*, a single point gas geyser.

Fires with Ovens. In 24 per cent of the households of Great Britain water is heated by fires with ovens. These appliances are, apart from coppers, the commonest of the water heating appliances. They are found more often in the North than in the South and in rural than in urban districts. They are found in the households of all the economic groups. Of them 93 per cent are piped to the sink and 88 per cent to the bath; 7 per cent are not piped and are the only unpiped appliances other than coppers. Of the households having fires with ovens, 74 per cent have coppers as well, 6 per cent have auxiliary electric and 2 per cent auxiliary gas methods of heating the piped supply.

Independent Boilers. Water is heated by independent boilers in 7 per cent of the households in Great Britain. These appliances are commoner in the South than in the North and in households of the higher than the lower economic groups. They are all piped to both bath and sink. Of households having independent boilers, only 12 per cent have coppers as well, but 12 per cent have auxiliary electric and 6 per cent auxiliary gas methods of heating the piped hot water supply.

Gas and Electric Methods. In 13 per cent of the households in Great Britain there is a piped supply of water heated by gas or electric appliances only and in a further 6 per cent by gas or electric methods in conjunction with one of the solid fuel appliances. Gas and electric appliances are much commoner in the South than in the North and in urban than in rural districts. Of households where the piped hot supply is heated solely by gas or electricity, 57 per cent have a copper and of those which have solid fuel appliances as well 48 per cent have a copper. In many cases, the numbers of the individual gas or electric appliances found in the sample were too small for their distribution to be taken as representative of the country as a whole; nevertheless some notes on the distribution in the sample are given below.

Single Point Gas Geyser. Ten per cent of the households in Great Britain have single point gas geysers and 1 in 12 of these households has 2 such appliances. The geysers are piped 63 per cent to the bath, 36 per cent to the sink and 2 per cent to the hand basin. Of households having single point gas geysers 11 per cent also have solid fuel appliances for heating a piped supply of hot water and 56 per cent have coppers.

Multi-point Gas Geysers. Less than 2 per cent of the households in the sample have multi-point gas geysers. They were found chiefly in the households of the higher economic groups and were always piped to the bath.

Gas Storage Heater. Less than 1 per cent of the households in the sample have a gas storage heater.

Electric Storage Heaters. Between 3 and 4 per cent of the households in the sample have electric storage heaters. Of these 91 per cent were piped to the sink and 40 per cent to the bath. About 12 per cent of the households with these appliances have in addition a solid fuel appliance for heating the piped supply, and 52 per cent have a copper.

Electric Immersion Heaters. In the sample 4 per cent of the households have electric immersion heaters installed in the tanks of their solid fuel appliances piped to the bath. Immersion heaters are most frequently found in the households of the higher economic groups and in the tanks of inset fires. About half of the households having them have a copper too.

TABLE 44. DISTRIBUTION OF APPLIANCES BY TYPE OF DISTRICT,

	NUMBER OF APPLIANCES IN SAMPLE	PERCENTAGE OF						
		DISTRICT		REGION				
		Urban	Rural	Scotland	North	Midlands and Wales	South and East	London
STORAGE HEATERS								
Solid Fuel								
Inset fire ..	688	90	10	22	30	22	10	15
Fire with oven ..	1,350	72	28	8	50	33	5	4
Independent boiler	391	81	19	4	4	9	38	45
Electric								
Storage	207	87	13	2	12	17	50	19
Immersion ..	249	93	7	9	42	24	8	17
INSTANTANEOUS								
Gas								
Single point ..	633	91	9	2	12	15	40	31
Multi-point ..	90	97	3	—	11	11	38	40
COPPERS								
Solid fuel ..	1,613	66	34	13	27	30	22	8
Gas	1,826	92	8	5	41	23	22	9
Electric	232	81	19	3	44	16	22	15
No appliance ..	896	79	21	20	16	17	21	26
		PERCENTAGE OF HOUSEHOLDS IN						
		80	20	11	28	22	22	17

Hot Water laid on. Less than 1 per cent of the households in the sample have hot water laid on.

Solid Fuel Coppers. In Great Britain 27 per cent of households have solid fuel coppers which, after the gas coppers, are the commonest appliance. They are fairly evenly distributed throughout the country but are slightly commoner in poorer households, in rural districts and in the older buildings. In 23 per cent of the households with solid fuel coppers there are also fires with ovens providing a piped supply of hot water, but 68 per cent have no piped hot water.

Gas Coppers. In Great Britain 30 per cent of all households have a gas copper, the commonest of all the water heating appliances. They are less common in Scotland and London than in the rest of the country, and commoner in the North. They are commoner in urban districts and in newer buildings than in rural districts or older buildings. Of the households with gas coppers 72 per cent have a piped supply of hot water provided by fires with ovens (31 per cent), inset fires (20 per cent), gas appliances (17 per cent), independent boilers (3 to 4 per cent) and a few electric appliances.

Electric Coppers. About 4 per cent of the households in the sample have electric coppers.

REGION, ECONOMIC GROUP, AGE OF BUILDING AND TYPE OF DWELLING

PPLIANCES IN :—

ECONOMIC GROUP					AGE OF BUILDING		TYPE OF DWELLING				
I	II	III	IV	V	Pre-1914	Post-1918	Detached house	Semi-detached house	Terrace house	Block flat or tenement	Other flat
7	7	38	41	7	41	59	9	39	33	11	8
8	8	45	32	7	50	50	16	38	40	2	4
2	2	16	45	35	58	42	31	43	18	2	6
4	2	35	45	14	57	43	14	34	42	3	7
1	2	14	46	37	34	66	28	53	15	1	3
8	6	37	40	9	66	34	9	35	46	3	7
2	7	21	45	25	56	44	14	30	26	8	23
14	10	50	22	4	83	17	15	23	52	7	7
8	7	44	35	6	52	48	7	37	49	2	5
4	3	46	35	12	45	55	12	48	36	1	3
22	12	52	13	1	96	4	9	14	54	17	6
AMPLE COMING UNDER DIFFERENT HEADINGS :											
11	8	44	29	8	68	32	13	30	46	6	5

SATISFACTION WITH APPLIANCES

Of the housewives in the sample who have solid fuel coppers, only about half are satisfied with them compared with three quarters of those with gas or electric coppers.

Among the piped appliances the immersion heater is considered satisfactory by the highest proportion of housewives—89 per cent of those having them. The independent boiler takes second place. The chief complaints about the other storage appliances are that the water takes too long to get hot and there is not enough at a time. In addition, 14 per cent of the housewives with an inset fire find that the water does not get hot enough. The complaints that there is not enough hot water at a time suggest that many storage tanks are too small.

Rather more criticism was levelled at the gas geysers; one in four housewives complained of having to run the water slowly. Complaints voiced more frequently about these appliances than others are that they often need repairing, that the water does not get hot enough and that the multi-point geyser is expensive.

The proportion of housewives dissatisfied with their method of heating water varied with the purpose for which the water was to be used. Relevant figures are given in Table 45. The striking feature of these figures is the much higher degree of satisfaction found in the newer dwellings.

In the highest economic group the proportion of dissatisfied housewives is 17 per cent in respect of bath water and 14 per cent in respect of clothes washing. In the lowest economic group the figures are 52 and 40 per cent. The difference between the two extreme groups is thus 35 per cent in respect of baths but only 26 per cent in respect of clothes washing. The smaller difference for clothes washing is probably due in part to the more even distribution of coppers as compared with, say, independent boilers. The highest economic group is also the greater user of laundries.

TABLE 45. EXTENT OF DISSATISFACTION WITH METHOD OF HEATING WATER IN BUILDINGS OF DIFFERENT AGES

	NUMBER OF HOUSEHOLDS IN SAMPLE	PERCENTAGE OF HOUSEHOLDS IN SAMPLE EXPRESSING DISSATISFACTION WITH METHOD OF HEATING WATER IN WINTER FOR:				
		Baths	Washing	Dish washing	House cleaning	Washing clothes
Age of Building						
Pre-1914 ..	4,095	57	49	47	46	43
Post-1918 ..	1,902	18	15	14	14	12
Total ..	5,997	44	38	37	36	34

Appendix I

DISTRICTS IN WHICH INTERVIEWS TOOK PLACE

Andover R.D.
Atherton
Aylesbury
Barnes
Bathavon R.D.
Bedford
Birmingham
Bolton
Brentford and Chiswick
Brighouse
Bristol
Bury
Bury St. Edmunds
Cardiff
Chertsey
Chester
Chesterton R.D.
Chorley R.D.
Colchester
Coventry
Darlington
Dawlish
Denbigh
Derby
Dorchester
Drayton
Dundee
Dunmow R.D.
Durham
Ealing
Eastern 1 District (Scotland)
Edmonton
Falkirk
Farnham
Forfar
Glasgow
Gloucester
Hornsey
Houghton-le-Springs
Hove
Hull
Islington
Kettering R.D.
Kidderminster
Lambeth
Leeds
Leicester
Lewisham
Lincoln
Liverpool
Llanelly R.D.
Loughborough
Luton
Maidstone
Malden and Coombe
Manchester
Midhurst R.D.
Monifieth District
Morecambe
Morpeth R.D.
Musselburgh
Neath
Newcastle
Newcastle-under-Lyme
Normanton
Northwich
Penge
Portsmouth
Preston
Reading
Rugby
St. Asaph R.D.
St. Germans R.D.
St. Marylebone
Sale
Sheffield
Southwell R.D.
Stepney
Sunderland
Sutton-in-Ashfield
Taunton
Todmorden
Tonbridge
Tredegar
Truro
Wakefield
Walthamstow
Warwick
Wetherby R.D.
Wigan
Wimborne and Cranborne R.D.
Wolverhampton
York

Addresses were drawn at intervals from the ward electoral registers for England and Wales and from the valuation rolls in Scotland.

Appendix II

COMPARISON OF SAMPLE FOR WATER HEATING INQUIRY WITH FIGURES FROM OTHER SURVEYS AND PUBLISHED STATISTICS

REGIONAL DISTRIBUTION	*Water Heating Sample* (%)	*Civilian Population*[1] (%)
Scotland	11	11
North	28	28
Midlands and Wales	22	22
South and East	22	22
London	17	17

DISTRIBUTION BY TYPE OF DISTRICT	*Water Heating Sample* (%)	*Civilian Population*[1] (%)
Urban	80	80
Rural	20	20

DISTRIBUTION BY AGE OF BUILDING	*Water Heating Sample* (includes Scotland) (%)	*Population and Housing*[2] (excludes Scotland) (%)
Pre-1914 building	68	69
Post-1918 building	32	30*
SAMPLE (Households) ..	5,997	11,276

*1% unclassified.

DISTRIBUTION BY TYPE OF DWELLING	*Water Heating Sample* (%)	*Population and Housing*[2] (%)
Detached house	12	12
Semi-detached house	32*	28
Terrace house	50	56
Flat	6	4
SAMPLE (excluding Scotland) ..	5,353	11,276

* The end house of a terrace was classified as semi-detached in this sample but as terrace in the other sample.

AGE OF INDIVIDUALS *Age Group* (years)	*Water Heating Sample* (March, 1947) (%)	*Civilian Population*[1] (December, 1946) (%)
0–5	8	8
6–14	13	14
15–24	13	12
25–34	17	15
35–44	15	16
45–54	14	14
55 and over	20	21
SAMPLE (Individuals)	21,337	—

These analyses suggest that the sample adequately represents the households of Great Britain.

[2] *Registrar General's Estimates, December, 1946.*

[1] *Population and Housing in England and Wales: Mid–1945*, by Geoffrey Thomas.

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